Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
The Boeing Company, Application for Authority to Launch and Operate a Non-Geostationary Low Earth Orbit Satellite System in the Fixed Satellite Service.	)	File No. SAT-LOA-20160622-00058

T-MOBILE USA, INC. REPLY TO OPPOSITIONS AND RESPONSE

T-Mobile USA, Inc. ("T-Mobile")[1/] submits this reply to the oppositions[2/] filed in response to the objections and petitions regarding The Boeing Company's ("Boeing") application for authority to launch and operate a non-geostationary satellite orbit ("NGSO") fixed satellite service ("FSS") system operating in the 37.5-42 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz bands (collectively, the "V-band").[3/] Neither SIA nor Boeing demonstrate how the Commission can process the Application now and still take the action contemplated in the *Spectrum Frontiers* proceeding, which addresses the same spectrum that Boeing seeks.[4/]

1/ T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

2/ An Opposition was submitted by the Satellite Industry Association ("SIA"), *see* Opposition of the Satellite Industry Association, IBFS File No. SAT-LOA-20160622-00058 (filed Dec. 12, 2016) ("SIA Opposition"), and an Opposition and Response was submitted by Boeing. *See* Opposition and Response of The Boeing Company, IBFS File No. SAT-LOA-20160622-00058 (filed Dec. 12, 2016) ("Boeing Opposition").

3/ The Boeing Company, Application for Authority to Launch and Operate a Non-Geostationary Low Earth Orbit Satellite System in the Fixed Satellite Service, IBFS File No. SAT-LOA-20160622-00058 (filed June 22, 2016) ("Application")*; see also Satellite Policy Branch Information, Boeing Application Accepted for Filing in Part, IBFS File No. SAT-LOA-20160622-00058, Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 37.5-40.0 GHz, 40.0-42.0 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz Bands*, Public Notice, DA 16-1244 (rel. Nov. 1, 2016) ("Public Notice"). The V-band consists of spectrum between 40-75 GHz. T-Mobile uses V-band throughout this reply for convenience.

4/ *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.,* Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd. 8014 (2016) (subparts referred to respectively as the "*Report and Order*" and the "*FNPRM*").

Moreover, the fundamental questionable premises of the Application – that spectrum is needed for satellite broadband and that the V-Band should remain available for satellite operations – must be addressed in a rulemaking, not an application proceeding. The Commission should therefore dismiss the Application or, at a minimum, delay its review of the Application until the *Spectrum Frontiers* rulemaking is complete.

I. THE APPLICATION SHOULD AT LEAST BE POSTPONED UNTIL THE *SPECTRUM FRONTIERS* PROCEEDING IS RESOLVED.

A. The Application Presents Issues Identical to Those Addressed in the *Spectrum Frontiers* Proceeding.

Both SIA and Boeing urge the Commission to process the Application, despite the overlap in the issues raised by the Application and those being considered in the *Spectrum Frontiers* proceeding.[5/] In fact, Boeing itself acknowledges this, stating that its Application "has provided the Commission with a more complete record in the *Spectrum Frontiers* proceeding" and that it "has explicitly agreed to accept approval of its Application conditioned on the outcome of the *Spectrum Frontiers* proceeding."[6/] But conditioning action on the outcome of a rulemaking proceeding is inappropriate where, as here, the rulemaking envisions a result fundamentally opposed to the use of the spectrum proposed by the Application. Grant of the Application will make moot the actions the Commission contemplates in the *FNPRM.*

Two examples in particular highlight that the Application is simply inconsistent with the approach the Commission proposes in the *Spectrum Frontiers* proceeding. *First*, Boeing requests that the Commission "keep the entire three gigahertz of the 47 GHz band as primarily for satellite end user uplink operations."[7/] In contrast, the *FNPRM* proposes to authorize fixed

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5/ Boeing Opposition at 11-12; SIA Opposition at 4-5.

6/ Boeing Opposition at 13.

7/ Boeing Opposition at 21.

and mobile operations in the 47 GHz band under the Part 30 rules.[8/] While Boeing claims that it is "willing to share" the 47-50.2 GHz band with Upper Microwave Flexible Use Service ("UMFUS") systems, it is only willing to do so if UMFUS is restricted to indoor locations, because of Boeing's need to "accommodate the tremendous bandwidth requirements of end users."[9/] This arrangement can hardly be considered "spectrum sharing" and is directly contrary to what the Commission has proposed in the *FNPRM*. Instead, Boeing's proposed use would dominate the band and would likely foreclose any terrestrial mobile operations. Grant of the Application with this "condition" would therefore effectively make the spectrum unavailable for mobile wireless operations.

Second, Boeing seeks use of the 50.4-52.4 GHz band – a band in which the Commission has proposed to authorize fixed and mobile terrestrial operations pursuant to its Part 30 rules.[10/] In fact, the *FNPRM* considers authorizing terrestrial operations up to 52.6 GHz.[11/] If Boeing is permitted to use the band as it proposes, it would therefore encumber and restrict over 5 gigahertz of spectrum (between 47 and 52 GHz) that could otherwise be used for mobile terrestrial operations. Contrary to the *FNPRM*, Boeing's proposal would compromise additional spectrum that could provide much needed capacity for mobile networks. The Application cannot be granted "conditioned" on the outcome of the *FNPRM*. The two represent fundamentally different approaches and granting the Application would effectively be making a decision in the *Spectrum Frontiers* proceeding.

8/ Opposition of T-Mobile, IBFS File No. SAT-LOA-20160622-00058, at 10 (filed Dec. 1, 2016).

9/ Boeing Opposition at 21.

10/ *FNPRM*, ¶ 420.

11/ *FNPRM*, ¶ 20.

Similarly, Boeing continues to assert that it can share the 37-39 GHz band in a way that is fundamentally inconsistent with the Commission's intent in the *Spectrum Frontiers* proceeding. It now provides a response to T-Mobile's analysis of Boeing's claims covering sharing of the band.[12/] This sharing issue is also under consideration in the *Spectrum Frontiers* proceeding. While T-Mobile submitted its analysis in the context of the Application, it was only in response to the specific assertions made there. T-Mobile continues to believe that the issue, like the others raised in the Application, is best resolved in the *Spectrum Frontiers* proceeding.

B. The Commission Should Not and Is Not Required to Process the Application at This Time.

To support its argument that the Commission should process the Application, SIA cites decisions in which the Commission has processed an application while a rulemaking is unresolved.[13/] While the Commission may have granted the cited applications, they actually demonstrate why the Commission should not have acted. For example, Teledesic and SkyBridge, two satellite systems referenced in SIA's opposition, were never deployed.[14/] Processing these applications separately from the related rulemakings was a waste of Commission resources, and the Commission should not take the same path here.

12/ Boeing Opposition at 17-19.

13/ SIA Opposition at 4-5.

14/ While the Teledesic and SkyBridge commercial satellite systems' applications were processed and the systems were licensed, they never neared the final stages prior to deployment. *See Ex Parte* Presentation of CTIA, GN Docket No. 14-177 *et al.*, at 7-8 (filed July 7, 2016); *see also* Rupert Goodwins, *Teledesic Backs Away From Satellite Push*, ZDNET (Oct. 3, 2002, 9:27 AM), http://www.zdnet.com/article/teledesic-backs-away-from-satellite-push/ ("After twelve years and 'hundreds of millions' of development dollars, high-speed satellite network company Teledesic is suspending activities and has gone into hibernation until the international markets pick up."); Tim Furniss, *Alcatel Set To Scrap Skybridge Project*, FLIGHTGLOBAL (Jan. 8, 2002), https://www.flightglobal.com/news/articles/alcatel-set-to-scrap-skybridge-project-140940/ ("Initially expected to cost $3.5 billion, Alcatel predicted the system would have 15 million customers by 2006. The project has hit numerous delays, while costs have ballooned. Originally due for a 2002 service start, the first satellite launch slipped to 2004, while the number of planned satellites rose from 64 to 80.").

Moreover, merely because the Commission may have granted applications in the past while rulemakings were pending does not mean it is *required* to do so. The Commission should exercise its discretion here and refrain from processing the Application until the *Spectrum Frontiers* proceeding has been resolved. Processing the Application at this time would be a waste of the Commission's resources, given the overlap of the issues presented. This is not a case where grant of the Application can be reformed later based on the outcome of the *Spectrum Frontiers* proceeding. As demonstrated above, the Application and the *FNPRM* take opposite approaches and grant of the Application will foreclose the Commission's options in the *Spectrum Frontiers* proceeding. Therefore, in the absence of an immediate need for services – which, as demonstrated below, is absent in this case – the public interest is better served by the Commission processing applications *after* all relevant policy and related questions are answered.

II. THE APPLICATION RAISES QUESTIONS THAT ARE BEST ADDRESSED IN A RULEMAKING PROCEEDING.

A. There Is No Need for an Allocation of Satellite Spectrum to Meet Rural Broadband Requirements.

Boeing claims that its proposed commercial satellite system will address broadband needs in rural and underserved areas – areas, it argues, that have been unmet by terrestrial services alone.[15/] Boeing's argument proves the point that T-Mobile and others have made – the question of whether rural and underserved areas are being met is best addressed through a rulemaking proceeding, not in the context of an application. T-Mobile and others are prepared, in the appropriate context, to demonstrate that Boeing's claims are overstated. In particular, as noted above, commercial satellite systems similar to the system envisioned by the Application have neither been operational nor widely-adopted, in comparison to terrestrial operating

15/ Boeing Opposition at 3-5.

systems.[16/] Most Americans do not use satellite services for broadband access.[17/] In fact, a study released last year showed that there are only 1.8 million satellite broadband subscriptions in the entire world,[18/] compared to approximately 375.5 million mobile broadband subscriptions in the U.S. alone.[19/] Further, 5G terrestrial services are still being developed, and they have the potential to expand terrestrial services' already significant reach.

B. V-Band Spectrum Need Not Continue To Be Reserved for Satellite Use.

Boeing continues to argue that the V-Band should continue to be dedicated for satellite use.[20/] As noted above, this issue is under consideration in the *Spectrum Frontiers* proceeding. But even if it were not, the future use of any spectrum band is more appropriately addressed in a rulemaking proceeding, particularly because T-Mobile and others disagree with Boeing's fundamental premise. Because Boeing and other satellite system operators are not using all of the spectrum the Commission has allocated for their operations, it is not in the public interest for satellite licensees to continue to prevent the spectrum from being used, at the expense of terrestrial mobile services, for which there is clear evidence of the need for more spectrum.

Boeing asserts that because the V-band spectrum is part of the current allocation for FSS, the spectrum should remain licensed to FSS and licensed in such a way that FSS use is

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16/ *See supra* text accompanying note 13.

17/ *See Ex Parte* Presentation of Straight Path Communications Inc., GN Dkt. No. 14-177, *et al.*, at 4-5 (filed July 7, 2016) ("A survey from the NTCA – The Rural Broadband Association found that among the 'more than 128 rural telecom and cable companies' that were surveyed by the NTCA, 'satellite was cited by less than a fraction of 1 percent of respondents' as the technology for broadband services.").

18/ *See* SATELLITE INDUSTRY ASSOCIATION, 2016 STATE OF THE SATELLITE INDUSTRY REPORT 2 (2016), http://www.sia.org/wp-content/uploads/2016/06/SSIR16-Pdf-Copy-for-Website-Compressed.pdf.

19/ *See Broadband Portal, Total Fixed and Wireless Broadband Subscriptions by Country*, Organisation for Economic Co-operation and Development (Aug. 2016) (data available in a downloadable chart), www.oecd.org/sti/broadband/oecdbroadbandportal.htm.

20/ Boeing Opposition at 28.

prioritized above other V-band users.[21/] The Commission should reject this suggestion. Despite Boeing and the satellite proponents' contentions, there has been no effort on behalf of existing satellite systems to actually use the vast amount of available V-band spectrum. The V-band has been available for satellite use for over a decade, and yet as Boeing states in its Opposition, the V-band is still considered merely a "near-term growth band for the broadband satellite industry."[22/]

In contrast, the terrestrial mobile industry has been and is putting its available spectrum to use by meeting the ever-increasing demand for spectrum due to consumer use of data over mobile wireless networks.[23/] For example, T-Mobile's 4G LTE network – the Nation's fastest growing LTE network – covers 312 million Americans,[24/] a number that continues to increase due to T-Mobile's investments in its network. T-Mobile has also deployed Wideband LTE to 231 million people and continues to expand its Extended Range LTE coverage.[25/] Given the

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21/ *See, e.g.*, *id.* ("Boeing should be authorized to use all of the spectrum that it has requested for its system conditioned on its ability to share that spectrum with other systems that are subsequently launched.").

22/ Boeing Opposition at 28.

23/ *See* CISCO, CISCO VISUAL NETWORKING INDEX: GLOBAL MOBILE DATA TRAFFIC FORECAST UPDATE, 2015-2020 WHITE PAPER 25-27 (2016), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html (discussing how usage of the mobile network has increased due to consumers' usage of mobile video content on various devices, which has spurred broadband traffic); *see also* EXECUTIVE OFFICE OF THE PRESIDENT COUNCIL OF ECONOMIC ADVISORS, THE ECONOMIC BENEFITS OF MORE SPECTRUM FOR WIRELESS BROADBAND (2012), http://www.whitehouse.gov/sites/default/files/cea_spectrum_report_2-21-2012.pdf ("As the volume of data flowing over a wireless network increases relative to the amount of spectrum available, the network can become increasingly congested, leading to dropped calls, delayed connections, and slower flows of data to mobile devices.").

24/ *See* T-Mobile News Release, *LTE Advanced Is So 2014. We're Already on to the Next Big Thing. Verizon is Now 50% Faster…and Still Slower Than T-Mobile!* (Sept. 6, 2016), https://newsroom.t-mobile.com/news-and-blogs/lte-advanced.htm; *see also* T-Mobile News Release, *T-Mobile Extended Range LTE Now Covers 240 Million People -- and it's Coming to Chicago* (Dec. 1, 2016), https://newsroom.t-mobile.com/news-and-blogs/chicago-spectrum.htm.

25/ *See* T-Mobile News Release, *T-Mobile Delivers Strong Customer Growth AND Financial Results* (Oct. 24, 2016), https://newsroom.t-mobile.com/news-and-blogs/q3-2016-earnings.htm.

scarcity of spectrum and the substantial economic and social benefits derived from exclusive licensed use,[26/] as demonstrated extensively throughout the *Spectrum Frontiers* proceeding, V-band spectrum is of particular interest to the terrestrial mobile industry.

Moreover, when the Commission made its decisions regarding FSS allocations in the V-Band, spectrum was not as scarce as it is today. That is precisely why the Commission is appropriately examining the future use of V-band spectrum in the *Spectrum Frontiers* proceeding. Because of the potential value of the V-band for terrestrial mobile wireless networks, the future of this spectrum should be decided in the context of the pending rulemaking proceeding.

III. CONCLUSION

T-Mobile commends the Commission's efforts in the *Spectrum Frontiers* proceeding to increase the availability of millimeter wave spectrum for licensed, terrestrial mobile use. There is significant overlap between the issues raised in the Application and those presented in the *Spectrum Frontiers* proceeding. The Commission cannot simply grant the Application conditioned on the outcome of the rulemaking proceeding; use of the spectrum as contemplated by Application would make the *FNPRM* moot in several critical areas. Moreover, the Application raises fundamental issues – such as the need for spectrum to serve satellite

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[26/] *See, e.g.*, Comments of CTIA, GN Docket 14-177, *et al.*, at 12-13 (filed Jan. 28, 2016) ("Investment by the wireless industry in licensed spectrum is extensive, with exclusively licensed spectrum generating $400 billion in economic activity each year."); *see also* THE BRATTLE GROUP, MOBILE BROADBAND SPECTRUM: A VITAL RESOURCE FOR THE AMERICAN ECONOMY (2015), http://www.brattle.com/system/publications/pdfs/000/005/168/original/Mobile_Broadband_Spectrum_-_A_Valuable_Resource_for_the_American_Economy_Bazelon_McHenry_051115.pdf?1431372403 ("In 2013, the wireless industry directly generated over $172 billion in revenues in the U.S. Additionally, the wireless industry directly employed over 180,000 people in 2013."); T-Mobile Opposition at 3 ("As consumer use of data-intensive applications such as video and Internet access continues to rise, the demand for mobile network capacity will only increase."); Petition for Reconsideration of T-Mobile, GN Docket No. 14-177, *et al.*, at 3 (filed Dec. 14, 2016) ("[T]he millimeter wave bands will be valuable in helping to satisfy the ever-increasing need for mobile network capacity and in meeting the needs of small-cell deployment of 5G networks.").

broadband applications and the future of the V-band – that are more appropriately addressed in a rulemaking proceeding. Accordingly, the Commission should, at a minimum, delay considering Boeing's Application pending resolution of these issues within the context of the *Spectrum Frontiers* proceeding.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Christen B'anca Glenn, hereby certify that on December 19, 2016, a copy of the foregoing Reply to Oppositions and Response of T-Mobile USA, Inc. was served by first-class mail, postage paid, on each of the following:

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